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THE fall of a part of the roof of the New York Post Office, killing four men who were at work upon it, has made a great excitement in that city, which has been increased by the animus with which the discussions on it have been conducted, and by the conspicuous position of the officials who are concerned with it. What was the immediate cause of the fall, it is not yet time to decide, but the known facts are substantially these. Before the retirement of Mr. Mullett from the office of Supervising Architect, it was thought necessary to enlarge one of the rooms in the intermediate stories of the Post Office building for the use of the Criminal Court; and a brick cross partition in the third and fourth stories was taken down. The upper portion of this partition, in the fifth story, on which rested a section of the roof, was left standing, supported by the iron beams of the floor. The roof was very heavy, being of iron beams, carrying arches of corrugated iron, the haunches levelled up with concrete, of which a layer covered the roof; on the concrete was a layer of cement which was covered with copper. The beams in the fifth story floor deflected under their load, and it was decided to remove the wall in this story, replacing it by a truss which should support the roof and relieve the floor-beams. A truss was provided by direction of the Supervising Architect Mr. Hill, of the same form as three or four others in similar positions in the building, and had just been put in place after taking down the brick wall, when, on the removal of the shores that had supported the roof, the truss gave way at once and fell with its section of the roof, as our readers know.

THEORIES of the reason of the failure conflict. It is of little use to expect to decide among them until the investigations which have been set on foot are concluded. Mr. Hill declines to give his opinion on the matter while the investigations are pending, a reticence which it would be well if other officers of the government would imitate. The superintendent of the building, Mr. Oakshott, thinks that there must have been a fault in the truss, which was made by Messrs. Heberman and Haven of Trenton. We do not know whether the other similar trusses in the building were made by the same persons. Mr. Mullett's theory is that the truss must have been wrongly placed. The newspaper reporters make Mr. Mullett say some singular things about Howe and suspensory trusses. It does not appear that any part of the building was disturbed by the casualty except the truss and the portion of roof that bore on it: the truss itself, it is said, was thrown to one side and twisted out of all shape. We see no recognition in any of the papers of the rather remarkable and gratifying fact that the floor of the fifth story was not injured by the tremendous shock of the falling mass. We think there are very few buildings in which the floors could have stood such a test. The composition of the coroner's jury, which includes four of the ablest architects of New York, gives assurance of a thorough and intelligent investigation, and the examination ordered by the Secretary of the Treasury will doubtless be searching. For these we can afford to wait; and the public may congratulate itself, with the belief that whatever may happen in the case of private bridges, theatres, and hotels, in the public service at least, the responsibility for such casualties will not be slurred over, or the offenders, if they are found, unrewarded. The reports received from the coroner's inquest as we go to press are that Mr. Hill's examination of the truss after its fall showed it to have been faulty in construction, having been copied by order, and incorrectly, from those which were already in place, and not carefully examined before it was set.

WE have received the pamphlet on the foundations of the Washington Monument published by the Joint Commission. The showing is not to the credit of the enthusiasts who have coaxed and urged Congress and the country with such eagerness to finish it. The building of the monument was undertaken in a very reckless way, and there were apprehensions of danger almost from the beginning. No tests were applied to the soil on which it was to be set, which was a tolerably firm alluvium, except by digging a well and inspecting the earth through which it was sunk. The monument was to be six hundred feet high, and the bottom of its foundation was made eighty feet square, which would have loaded the earth, according to the computed weight of the superstructure, with eleven and a half tons to the square foot, — a pressure to which that of the Great Pyramid, distributed over the enormous area of its base, is small. The beds of the foundation stones were not dressed, and the uneven joints were pinned up with small stones, filled with mortar and grouted, as in ordinary foundations. The marble facing of the shaft was worked to a fine joint a little way from the face, and then was roughly dressed back on a bevelled bed, leaving a wide joint to be filled with mortar, and throwing the pressure on the face of the stone. The backing was of loosely laid rubble containing a great amount of mortar, and ready by its settlement to bring an enormous weight on the close joints of the facing.

THE work, begun in 1848, came to a dead stand in half a dozen years, the funds of the association being exhausted. The safety of the monument was already questioned when in 1859 a new movement in its behalf was authorized. In that year Lieut. Ives of the Topographical Engineers reported to Congress that the edges of the facing had yielded to the pressure at the joints, and were chipped. He had not however noticed any settlement of the building, and considered the project a safe one. But before any thing was done the war intervened, and it was let alone again for a dozen years and more. When the Centennial Exhibition was projected, it was thought desirable to finish the monument in time for it, and in February, 1873, the Secretary of War ordered a new examination of its condition. Lieut. Marshall of the Topographical Engineers reported that the spalling of the lower courses of the facing had continued, and that some of the blocks had cracked; also, that some of the foundation stones of blue gneiss had split, and that the upper foundation course had an inclination to the north-west. In his report appears for the first time, we believe, the suggestion to substitute for the circular colonnade, or "Pantheon," that was to have encircled the base, but had apparently by this time been given up, a terrace two hundred feet broad and seventeen feet high, something of the kind being thought necessary to cover the foundation courses which showed above ground, and the injured facing about the base of the shaft. He concurred nevertheless in Lieut. Ives's opinion of its security. A year later, in the spring of 1874, at the request of a committee appointed by the House of Representatives to consider the matter, Lieut. Marshall was ordered to make a more minute examination, and report as to the safety of carrying out the work. He found that the top of the monument inclined an inch and a half to the north-west, an inclination which corresponded to that which he had before noticed in the foundation. He reported that the soil under the monument was a somewhat compressible mixture of sand and clay, and that it was loaded with a pressure of nearly five tons per square foot. The foundations themselves he reported as faulty in construction but probably sufficient, and the masonry of the shaft poor. He recommended that the height of the shaft be reduced one-third, from

six hundred feet to four hundred, that it be built with thinner walls and lighter materials. Being pressed by the chairman of the House committee for an explicit opinion, he gave his judgment that it would be safe to build as he proposed, but added that the weight upon the soil would "still be about twice as great as the maximum usually considered proper for such foundations." This report was referred to the Board of Engineers for Fortifications, Gens. Barnard, Tower, and Wright. Comparing the facts in the case with those of other structures on similar soil, they decided that five tons per foot was "an excessive pressure for soils composed of clay and sand," and declined to recommend placing any additional weight on the monument. Gen. Humphreys, the Chief of Engineers, thereupon submitted the reports, recommending that architects be invited to suggest some way of finishing the monument without adding to its height, and that more careful examinations be made of the soil on which it stands.

ON the strength of these reports the Monument Association revised their design, and proposed to make the monument four hundred and eighty-five feet high, with a terrace two hundred feet broad and twenty-five feet high about its base. They besought the people of the country to give their money for it, and beset Congress to grant them a subsidy. The centennial came, and the building of the monument was not resumed; but in last August a bill was passed appropriating two hundred thousand dollars to help finish it, coupled with the proviso that a thorough examination of the foundations should be made, and that if they were found inadequate the appropriation should lapse. The report of Col. Kurtz and Gens. Duane and Gillmore, in response to this order, is the decisive part of the pamphlet. They speak of the foundations as "rubble masonry of inferior quality," in which the joints are pinned up with small stones and liberally filled with mortar. The facing of the lower part of the shaft presents "an unsightly and discreditable appearance." The shaft has a slight inclination toward the north, the dip of the foundations being greater, probably, because the effect of their settlement was partially corrected as the shaft was carried up. By referring to a bench-mark fixed by the architect of the monument, Mr. Robert Mills, they find that the whole structure has settled bodily nearly nine inches. They have carefully tested the subsoil, which is a mixture of sand with a large excess of compressible clay. Four holes were dug on the four sides of the monument, and prisms of the earth taken from below the level of the foundations were submitted to pressure. Under a weight equal to that imposed by the original design, the earth confined in a close box was compressed by five per cent of its depth. They show that the history of other structures on similar soil indicates that even the pressure of the monument as it stands is in excess of what has usually been found safe, and they sum up their conclusions by saying: —

"That the stratum of sand and clay upon which the monument rests is already loaded to the limit of prudence, if not indeed to the limit of safety, and that it does not offer sufficient resistance to compression to justify the completion of the shaft in accordance with the modified design, or any other design that will load the underlying soil beyond ten thousand pounds per square foot.

"That additional weight imposed at the top of the structure would in all probability cause additional, and possibly extensive spalling and splitting in the ashlar facing near the base.

"It is evident that the masonry foundation was not given spread enough to carry safely the weight it was designed to place upon it. . . . There has been actual compression of the soil to the extent of between eight and nine inches. The shaft is sensibly out of plumb, and the foundation courses show increasing departure from horizontality." The friends of the monument have, as is known, shown some disposition to fight the report; but we presume it will give the undertaking its quietus. At least it must put a stop to the use of the appropriation voted by Congress. The question remains, what shall be done with the stump.

THE buildings for the Paris Exhibition of 1878 are growing rapidly. On the Champ de Mars the foundations are laid. The angle pavilions, which are of masonry and fifty feet high, are ready for the iron domes that are to cover them; and the walls of the central gallery, which is likewise of masonry, and intended for the fine arts exhibition, are almost finished. The piers of the rest of the building are ready for the superstructure of iron and glass. On the Trocadéro, in spite of the great difficulty of laying the foundations on the hill undermined by quarry-galleries, the two elliptical wings are built, the substructures of the great towers are laid, and the masonry of the central rotunda is finished. Two thousand men were employed upon the works; and up to the 1st of April, 1,800,000 francs had been expended upon excavation and masonry; covering 158,000 cubic mètres of excavation, 30,000 cubic mètres of concrete foundations, and 35,000 cubic mètres of masonry. Six miles of pipes and sewers had been laid.

THE question of disposing of the building on the Trocadéro has been one of some difficulty. Since the land belonged to the city, while the building was to be erected at the cost of the state, the city had at first exacted from the state an agreement to remove the buildings, and restore the ground to its original condition, at the end of the exhibition. It was afterwards agreed, when the proposal was made to build a permanent hall, that the city should either buy it on certain conditions, or allow the state the use of the ground rent-free so long as the building was maintained for public uses. An agreement has at last been made, under which the building is to remain, with the conditions that the galleries shall be kept open to the public, that it shall be lighted (and we suppose maintained) at the charge of the city, and that within six months after the closing of the exhibition, the city shall decide whether to purchase the building at the price of three million francs, to be paid in six annual instalments, or to cede the ground on which it stands to the state, in the understanding that the gardens about it shall be restored, and that the great cascade and the aquariums shall become the property of the city. The palace, as it is called, is to be used for election-meetings, for sessions of the mechanics' syndicates, for public lectures, and for the establishment, if it is accomplished, of museums of ethnography and of historic and prehistoric archæology. This decision is not reached without opposition from persons who argue that the Trocadéro, being remote from the centre of the city, and unfrequented, is not the place where a permanent building will be of public service.

BERLIN AND ITS BUILDINGS.

[Second notice.]

IF there were natural obstacles, as we said in our first notice of this book, in the way of making Berlin a great city, there were apparently even greater ones in the way of making its architecture great. It was, at the time when its kings first undertook to embellish it, a city without architectural traditions. It had been too insignificant during the great building epochs of the middle ages to have any valuable heritage of famous buildings which could shape the architectural instincts of its population. That population, gathered from all quarters, was too miscellaneous to have any such instinct in common. The architecture that is imposed upon a city in such a case is not likely at first to sit more naturally than the coat which one buys at a ready-made shop. It must almost necessarily be either entirely formal or eclectic. The day of eclecticism had not yet come, and the formal Renaissance of the seventeenth century was not out of keeping with the rather stern rule of the monarchs who encouraged it. Art was exotic, and the architects themselves, like the inhabitants, were during the seventeenth century mostly importations. Among the names of the chief architects of that period whose names are given in the introductory chapters of *Berlin und seine Bauten*, we find Dutchmen, Swedes, Frenchmen, Italians, and others from nearer home, — Schleswigers, Saxons, — but rarely a Berlinese or even a Brandenburger. Nehring, the busy architect of the Great Elector, to whom the greater part of the architecture of the seventeenth century in Berlin was due, and of whose work the *Parochialkirche* and *Zeughaus* still survive, was a Dutchman. Schlüter, his more famous successor under the first king, was a Hanoverian sculptor and architect. Berlin is still proud of

his works, the enlargement of the Royal *Schloss* and the statue of the Great Elector, as well as of the unexecuted designs which he left behind, and recalls with sympathy his sudden disgrace at the hands of a king whose ingratitude to his servants was a proverb, after the constructive failure of the *Münzthurm* which he had added to the *Schloss*. Knobelsdorff, the architect of the Opera House, the Palace Theatre, and of portions of the palaces of Charlottenburg and Sans-Souci, Boumann who built the Domkirche, Gontard and Langhans — all were foreigners.

There were other difficulties in the way of the architectural development of Berlin. The nation was young and not wealthy, its population and therefore its fiscal necessities increasing faster than its income; and a heavy drain was on its finances from the long wars of its vigorous monarchs, while their ambition for splendor was tempered by frugality. The most ambitious schemes for the adornment of the capital were checked or marred in execution by want of money. Another want, almost as obstructive to architecture, was the want of good building-material. The alluvial plain in which Berlin is situated furnishes none, or next to none. The one available quarry, at Rüdersdorf, fifteen miles from the city, yields a fossiliferous limestone which serves for foundations and for lime-burning, but which it has not been found worth while to use freely in architectural work. Erratic boulders of granite, which were found scattered over the plain, furnished the material for some of the few mediæval buildings which remain wholly or in part to the present day, and later for paving the streets of the town; but these have long ago been picked up as carefully as the farmer picks the stones from his cornfield. So long as transportation was difficult and costly, this lack of material was an almost insurmountable difficulty in the way of a rich and substantial architecture. The Magdeburg sandstone which was used to some extent in the older buildings proved perishable; and some use has been made of sandstone from "Saxon Switzerland," of which the famous Brandenburg Gate by Langhans was built, but which like the other was thought too costly for any thing but what are vulgarly called, in milliner's phrase, the "trimmings" of buildings. Even Schinkel was obliged to see his most famous works executed in inferior materials. It is said in the book before us that till within the present decade the Brandenburg Gate was absolutely the only building in Berlin whose whole exterior was of stone. Since the French war a good deal of French stone has been imported, and with the increase of luxury and wealth stone buildings are becoming common.

There was abundance of clay and sand about Berlin, and abundance of limestone in the quarries we have mentioned; and so the city became in its mediæval days a city of plain brickwork, of stuccoed brick in the Renaissance period of its prosperity. Brick is a sufficiently neutral material, stucco hopelessly so; and in this respect also, Berlin lay quite at the mercy of whatever foreign influence might bear upon her architecture. That influence was exclusively Italian. The architects who were imported were mostly of Italian training. Those with whose education successive kings occupied themselves were sent to Italy to study; and the result is that Berlin architecture shows but little of such modification by local influences as befell Italian architecture imported into French or even English cities, and is in fact more characteristically Italian than that of any other northern city that we recall. It is much to its credit, to whatever influence it may be owing, — the moderation of individual architects, the general sober taste of the community, or the restraining hand of severe and frugal kings, — that the dangerous facility of stucco has not inclined it to license; and if it has been somewhat dry and formal, it has at least escaped the greater evils of extravagance and tawdriness to which stucco architecture is prone. With such materials and with such influences of style, Berlin would naturally not offer any great hold to the rationalistic doctrines of architecture that have made so much impression on England during this century. The gospel of constructive architecture has hardly been preached there. The monumental aspect of buildings has had almost exclusive attention, and the desire of the rationalistic critic to read in the front of a building the indication of what is behind it, would be starved in Berlin. To this day it is hard to find there a building in which a façade is any thing more than a façade, or in which any but purely "architectonic" considerations have had an effect, or even one which is not rigidly symmetrical.

The architectural interest of Berlin really begins with Schinkel's works. Painter and architect, the apostle of the Greek revival in Berlin, he exercised more influence on the architecture of this city than any other man. An annual Schinkel Festival of the Architectural Association, and annual prizes for designs given in his name, are witnesses of the abiding reverence in which the name is held. The new guard-house, the old museum, and the great theatre, are the most interesting and characteristic of his works to travellers, and are monuments of the elegance and freedom of his invention in the adaptation of Greek forms to modern uses, altogether free from the rigid pedantries that marked the earliest Greek revivals in other cities. Unhappily they suffered from the lack of good material and the exiguity of means that characterized Berlin. The guard-house, one of the most elegant of Schinkel's elegant designs, is of common brick, embellished with stone; the museum and theatre are of stucco. The floors and roof of the museum are combustible. The Bau-Akademie, one of his latest works, marked, as it were, a new departure, in which he made a characteristically original attempt to adapt his design to the materials which his neighborhood furnished. It is built of brick and terra-cotta, and is more attractive for the interest of its detail, and as a pioneer work, than for its happy architectural effect. Its suggestions seem to have been more followed elsewhere than in Berlin. But from Schinkel's time a great change has come over the architecture of his city, bringing a great advance in freedom and elegance of detail, in which Greek influence is strongly marked, and also a greater liberty in composition, though the old classic firmness and rigid symmetry of arrangement is scarcely relaxed.

We have left ourselves no room to speak in detail of the buildings of Berlin, for which, in fact, our limits were quite inadequate. For this the reader cannot do better than consult the book itself. He will find in it valuable and interesting solutions of some of the prominent problems of the day. For the planning of congregational Protestant churches, for instance, he will find useful lessons in the modern churches of Berlin, more probably than in those of any other city; not, perhaps, so much for their purely architectural success, but for the care and skill which able architects have shown in their planning. In housing her population, the habits of Berlin are not so progressive as those of some other great cities, — Paris or Vienna, for example. Separate dwellings are the rule, and apartment houses the exception. But on the designing of detached city houses, of semi-country houses, as it were, her modern architects have spent much talent. Of these, the finer residence streets, especially near the Thiergarten, furnish as attractive and elegant examples as are anywhere to be found.

THE SANITARY CONDITION OF CITY HOUSES.[1] — III.

THE most important improvement in house-drainage that has been made is the comparatively recent one which has grown out of our better knowledge of the true character of the decomposition taking place in the soil-pipe. It has for its objects — and it accomplishes these objects perfectly — the reduction of putrefactive fermentation to the lowest minimum, and the complete and immediate dilution of the gases which the slight remaining putrefaction produces. It consists in creating throughout the whole length of the soil-pipe a constant supply and a constant movement of fresh outer air. Except for the danger of freezing in cold climates, the best way to accomplish this purpose is to admit a small air-pipe — one inch in diameter will be sufficient — at the lower end of the soil-pipe, at or near its passage through the house-wall, and the continuing of the soil-pipe itself, full bore, up through the roof of the house, furnishing it with an efficient cowl to increase its draught.

In climates so cold that even this small direct admission of air would be dangerous, the pipe through which it comes may pass for a greater or less distance under the ground, or inside of the cellar, to raise the temperature of its air above the freezing point. With a good draught in the soil-pipe itself, enough fresh air may be admitted through even fifty feet of one-inch pipe.

Fludder's modification of the system is even more complete and effective, and its adoption will add little to the cost of the best plumbing work.

Fludder not only carries the soil-pipe through the roof, but he

[1] Continuation of a paper read before the Public Health Association of New York, by George E. Waring, jun.

also carries another pipe of the same size from the top of the soil-pipe where it is about passing the foundation wall, along the ceiling of the cellar, and up through the kitchen-chimney flue, — the only flue in the house that is sure always to be heated. The course of the air in this case is down the main soil-pipe, and up the kitchen-chimney ventilating flue. It secures a large volume of air — there cannot be too much — and the all-important constant circulation. A valuable adjunct of this system is a damper or valve in the main soil-pipe, above the highest closet connection, which ordinarily stands open, but which being connected with the pull-up lever of each closet, is closed when this is raised. The construction of the closet is such that when it is being emptied, there is no trapping water between it and the soil-pipe. When the handle of the closet is raised, its first effect is to close the valve in the soil-pipe, and its next to open a free passage between the water-closet and this pipe. While the closet is thus open, it affords the only inlet for air to supply the draught for the ventilating flue. When the handle is released, the closet seals itself with water; the valve in the upper part of the pipe is opened, and the free circulation is re-established. Should the amount of cold air admitted by this system be enough to cause a closing of the soil-pipe with gathering frost, this very closing will prevent the further admission of air, and the warmth of the house will soon melt away the obstruction ; which, be it understood, is at a high point in the soil-pipe, where it is not likely to do harm, as it would do at its lower end.

Where a ventilating cowl is to be used to maintain a draught, it is important to consider its kind. The present movement both here and in England is in favor of some form of mechanical device by which the action of even a slight wind shall increase the suction by mechanical means, when even a slight wind is blowing. It is more important that the current through the soil-pipe should be constant, than that it should be rapid; and these mechanical cowls, of which Banner's and the Archimedian are good examples, offer a certain obstruction to the flow when at rest. In baffling winds Banner's cowl especially may easily cause a back draught.

Whatever may be best for smoke-flues, nothing has yet been devised which is so good for soil-pipes as the old "Emerson" ventilator, of which the patent has run out, and which therefore lacks the advocacy of liberal advertising. This cowl increases the draught with every wind that blows, and in every eddy; and when the atmosphere is at a dead stillness, it offers no obstruction to the circulation.

The soil-pipe being properly constructed and duly ventilated, the only further practical improvement in the waste drain system seems to lie in making its branches, which lead from bath-tubs, wash-basins, etc., as short and as large as practicable, so that they may partake by the transfusion of gases, of the purer condition of the air in the soil-pipe itself. It will not always be possible to ventilate each of these pipes independently, though this is always desirable; but with a ventilated soil-pipe and large free waste branches, we need fear no serious tainting of the air that they contain.

Did the limit of this paper suffice, it would be well to consider the construction and location of water-closets; but I must confine myself to the simple question of the proper ventilation of the apartments in which they stand. Unfortunately, it is rarely practicable, as our houses are arranged, to give them an open outer window; but they surely require some more efficient means of ventilation than a small hole in the wall more than half closed by the air-bothering network of a register, and leading into a small flue choked and obstructed from bottom to top with rough lumps of intruding mortar. The ventilation of these apartments would be materially improved by the use of shafts of six-inch earthenware pipes smoothly jointed, discharging well above the roof, and protected by an elevated cap against the entrance of rain-water.

There is a somewhat active modern crusade against the stationary wash-bowl, and as stationary wash-bowls are ordinarily arranged, the crusade is certainly justified. At the same time, the convenience of these appliances, and the degree to which they augment the luxury of an abundant water-supply and a good drainage system, are so great that it is worth an effort to retain them. Such a wash-basin anywhere within the house is, under its existing conditions, in danger of becoming a channel for the influx of sewer-gas; and even were our drainage pipes and sewers so carefully arranged as to reduce the production of foul gases to the minimum, it would still be most important to remove the possibility of the entrance of drain air anywhere within the house.

I trust that I may be excused for mentioning a device of my own for accomplishing this purpose. It consists in supplying wash-basins, bath-tubs, butler's sinks, kitchen-sinks, and all vessels, except water-closets, by which a water-supply is made useful, with a plug that closes the main outlet from below, so that any pressure of gas instead of forcing it open shall force it more tightly shut, and so arranged that it must always remain closed except when held open by the hand; and in putting a stop-cock in the overflow pipe, worked by the same handle that works the stop-cock of the supply-pipe, so that when the supply-pipe is open and the overflow may be needed, this latter shall be open also, and that when the supply-pipe is closed, the overflow pipe shall be completely closed as well. With this arrangement it is impossible that there should be the least connection between the air of the drainage system and the air of the room; the usual water-trap seal below the basin, worthless though it is as a permanent reliance, suffices for protection during the short time required to fill the vessel.

Aside from its danger the usual wash-basin is objectionable as being something less than fastidiously nice. If it has a plug and chain, these become soiled with dirty water, and are not thoroughly cleansed before the next use. If the waste plug is operated by a handle rising through the slab, there is a considerable length of pipe between it and the bottom of the basin, which is sure to be coated with a slime of soap and dirt, with which the next filling of the basin is materially fouled.

These latter defects are removed by my device and by a recent invention of Wheaton of Dayton, O. If by the use of any of these improvements the entrance of sewer-gas is prevented and the dirty outlet chain or slime-coated open outlet pipe is got rid of, I see no reason why the most liberal extension may not be given to the use of all manner of vessels to be filled from the public water-supply.

There are many minor details that might with advantage be alluded to did time permit, — such as the objections to long horizontal waste-pipes ; the importance of having these waste-pipes trapped only at their upper ends, delivering at their outlets into a freely ventilated soil-pipe ; the increasing importance of ventilating waste-pipes in proportion as their length increases ; the necessity for delivering the ventilation of foul pipes at such points as will prevent their outflow of air from being involved in the back-draught of unused chimneys ; and all the long detail of house ventilation and the pregnant subject of the poisoning of the air by the carbonic oxide produced by the burning of anthracite, which Dr. Derby demonstrates in his valuable monograph on "Anthracite and Health;" together with the effect on health of that foul-smelling effluvium which comes from the heating of organic dust by steam-pipes, and which makes an unventilated steam-heated room so disgusting to the unaccustomed nostril.

These are relegated to a secondary position because, like the necessity for free sunshine in all inhabited rooms, they are less obviously connected with the question of life and death than is the matter of drainage pure and simple, and are therefore less likely to engage immediate attention.

Interest in sanitary improvement will naturally first apply itself to the more serious causes of fatal and distressing disease; but once awakened it will pursue the whole range of the subject and will, let us hope, not abate until it has compassed a perfectly wholesome condition in every department, and has secured to all, what all have a right to demand an entirely safe human habitation.

THE ILLUSTRATIONS.

DESIGNS FOR A PUBLIC LIBRARY, BY MR. H. EDWARD FICKEN AND MR. W. KIRKUS, JUN.

THESE drawings received respectively first and second prizes in the competition opened to junior members of the Institute by the New York Chapter, and decided on Feb. 22. Subjoined is the programme of the competition, which was open to junior members of all Chapters of the Institute : —

A public library in a country town, located in an open square, 200 x 200 feet; to have space for a miscellaneous collection of 10,000 volumes, and to comprise a public reading-room, a private room for the librarian, a trustees' meeting-room, and two small private rooms for purposes of study; apartments for a janitor and his family, which may be placed in a basement; the floor of basement to be on a level with ground, and to have a cellar under it; the building to be of brick or stone, and fire-proof.

All drawings to be executed in India ink, it being optional whether they be tinted or not. Geometrical elevations will be required, and the addition of perspectives will be desirable.

The Committee on Education will decide on the merits of the designs. Diplomas of first and second rank will be awarded, and published, with the selected designs, in the *American Architect and Building News.*

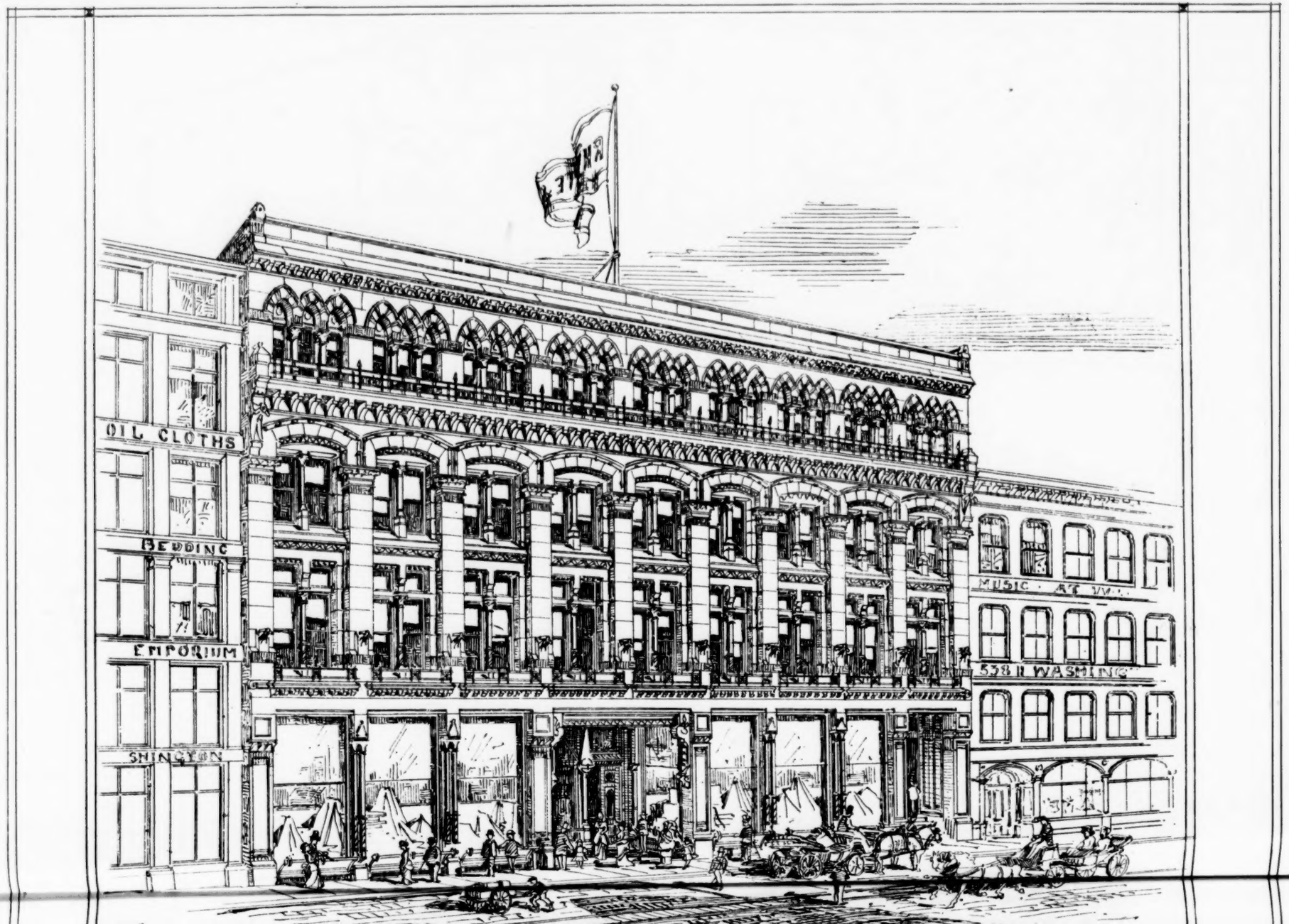
DRY GOODS ESTABLISHMENT OF R. H. WHITE, BOSTON, MASS. MESSRS. PEABODY AND STEARNS, ARCHITECTS.

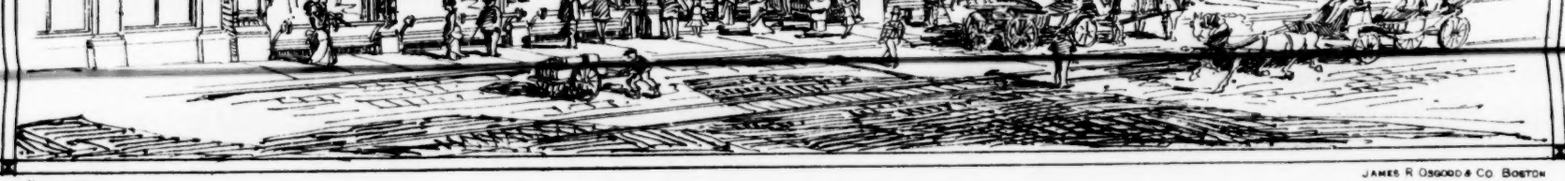
CELLS OF THE HOUSE OF DETENTION, ST. PETERSBURG, RUSSIA.

"ART AT HOME."[1]

THESE little volumes of from ninety to a hundred pages each are reprinted from the original English editions, and belong to the "Art at Home Series," embracing such subjects as *Drawing and Painting*, by W. H. Stacey Marks, A. R. A.; *Dress*, by Mrs. Oliphant; *Family Music*, by John Hullah; *Domestic Architecture*, by J. J. Stevenson; and including other volumes to follow on Gardening, Sculpture and Carving, Needle-work and Lace-making, etc.

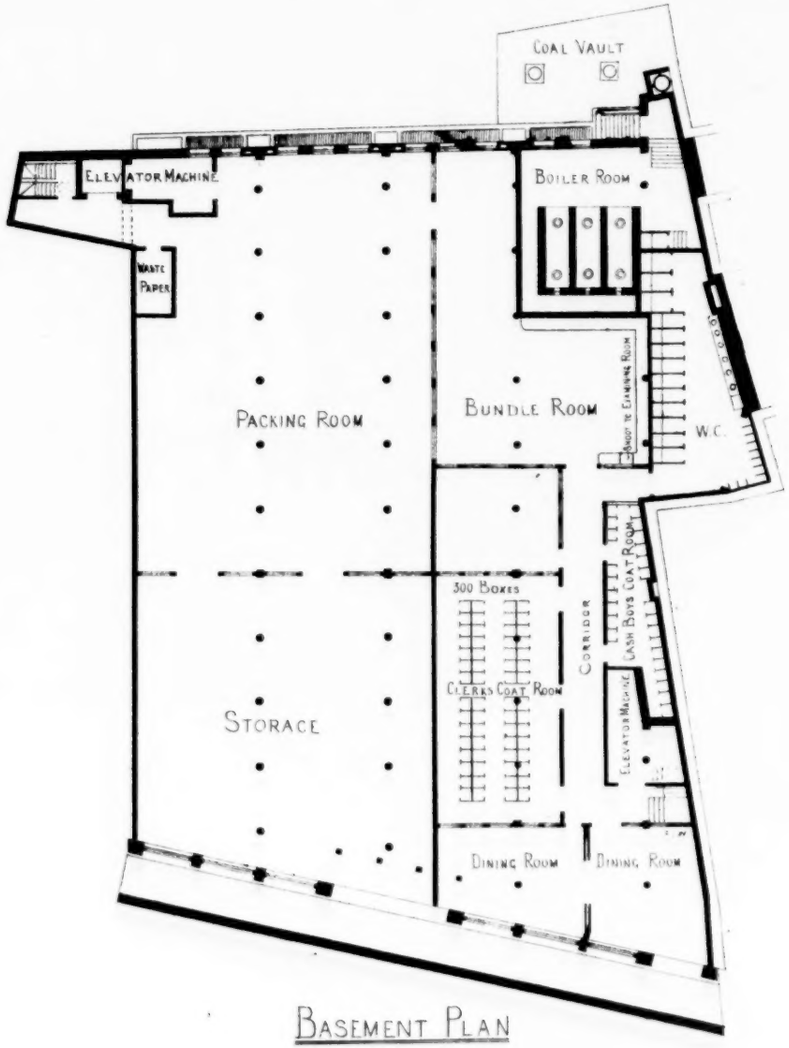
[1] *A Plea for Art in the House*, with special reference to the economy of collecting works of art, and the importance of taste in education and morals; by W. J. Loftie, B. A., F. S. A., author of "In and Out of London."
Suggestions for House Decoration in painting, woodwork, and furniture, by Rhoda and Agnes Garrett.
Philadelphia: Porter and Coates, 822 Chestnut Street. Price $1.00 each.


OIL CLOTHS
BEDDING
EMPORIUM
SHINGLES
MUSIC
538 N WASHING

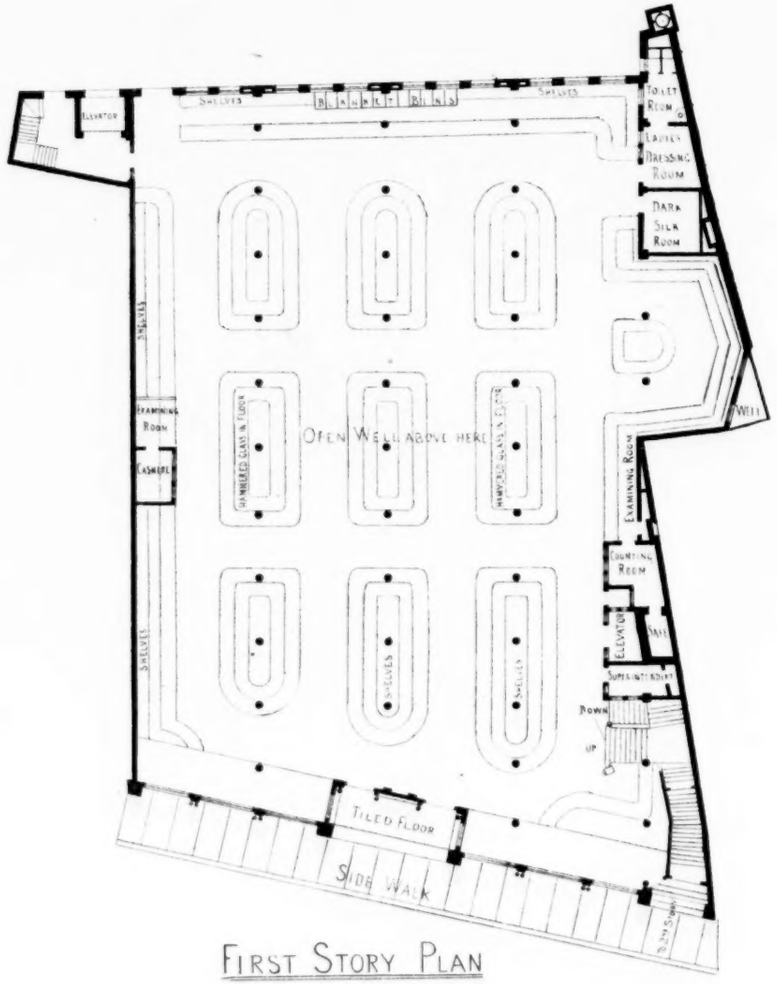


HELIOTYPE

JAMES R OSGOOD & CO BOSTON



BASEMENT PLAN

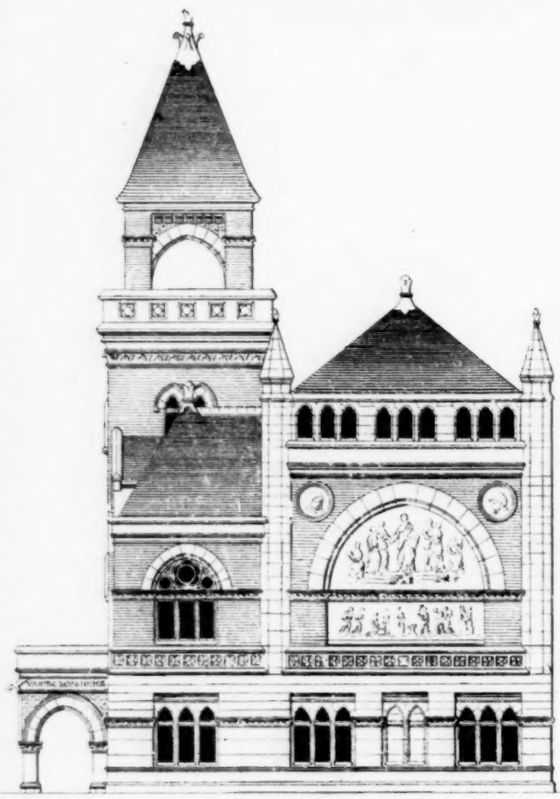


FIRST STORY PLAN

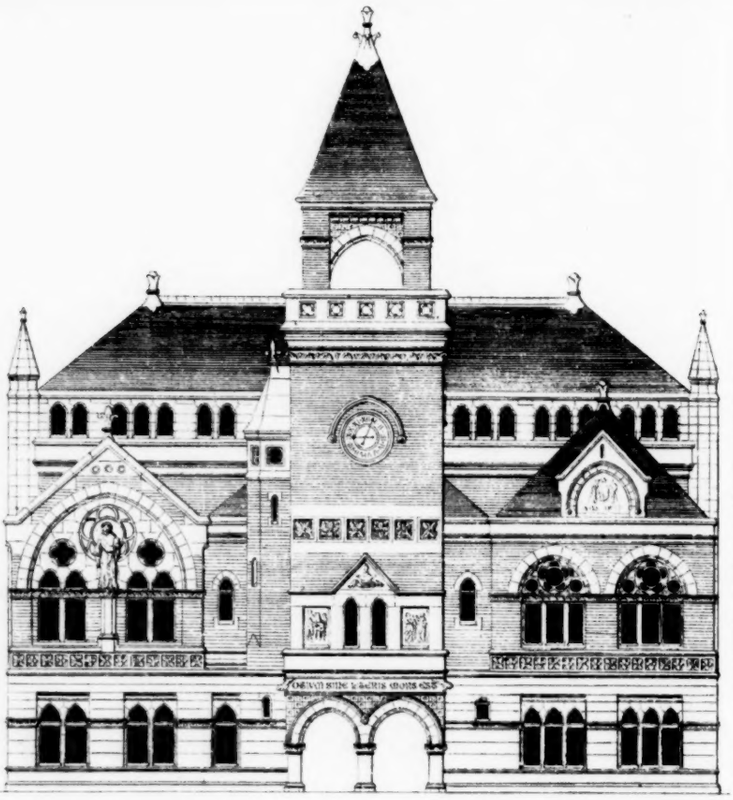
PEABODY & STEARNS - ARCHTS. || STORE FOR R H WHITE & CO ON THE FROTHINGHAM ESTATE || BOSTON

HELIOTYPE

JAMES R OSGOOD & CO BOSTON



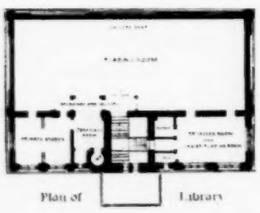
Side Elevation.



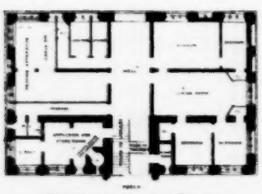
Front Elevation.

DESIGN FOR PUBLIC LIBRARY.

DESIGN FOR PUBLIC LIBRARY.



Plan of Library



Plan of Basement

DESIGN FOR PUBLIC LIBRARY.

ДОМЪ ПРЕДВАРИТЕЛЬНАГО ЗАКЛЮЧЕНІЯ ВЪ С ПЕТЕРБУРГѢ

Разрѣзъ

ДЕТАЛЬ
ДВЕРЕЙ И ГАЛЛЕРЕИ
ОДИНОЧНЫХЪ КЕЛІЙ

К.Я. Маевскій C. Matewsky

MAISON DE DETENTION PREVENTIVE A St^PETERSBOURG

Façade

DETAILS
DES PORTES ET GALLERIES
DES CELLULES SEPAREES

ДОМЪ
ПРЕДВАРИТЕЛЬНАГО
ЗАКЛЮЧЕНІЯ
ВЪ С ПЕТЕРБУРГѢ

MAISON DE DETENTION
PREVENTIVE
A St^PETERSBOURG

Планъ
Plan

Продольный разрѣзъ
Coupe longitudinale

Поперечные разрѣзы
Coupes transversales

ДЕТАЛЬ
ОДИНОЧНЫХЪ КЕЛІЙ

DETAILS
DES CELLULES SEPAREES

К.Я. Маевскій C Majewsky

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

The works before us are of the nature of tracts. They are addressed to the "middle class" public of England, and pretend to no greater scope than the enunciation of a few leading principles; the first advising as to the most judicious method of collecting furniture, pictures, prints, books, and china, and the second proposing to show how the traditional ugliness of a London hired house of the second class may be partially redeemed.

The picture presented of the characteristic London house is gloomy and forbidding in the extreme. The walls of the hall are covered with varnished paper meant to have the appearance of marble; the woodwork is grained in imitation of oak, walnut, or marble; the floor is laid with a cold tile pavement bad in design and color; light is admitted through glass of crude and violent colors; the balustrade of the staircase is of cast iron with coarsely moulded ornament, picked out perhaps with incongruous gilding. The dining-room is hung with crimson and gold flock paper, or painted with a uniform tint of light green; the woodwork is grained, and the doors decorated with black composition finger plates and handles; the chimney-piece is of black marble with an ugly cast-iron grate; the curtains are of crimson rep; the furniture is of heavy mahogany "bent and curved into every form but that which would secure sound construction and harmonious lines." In the drawing-room there is a watered white and gold or sky-blue paper; the enrichments of the ceiling are picked out with all the colors of the rainbow; on the floor is upset "the whole contents of a conservatory;" the furniture is a mass of ingenious discomfort and "solicitous wrigglings,"—"all convulsed with a desire to be sufficiently elegant for a drawing-room;" and over the whole is waged a warfare of ill-assorted colors. The bedrooms are dark and dingy; the woodwork is painted maple, a whitey-gray paper is on the walls, and the chimney-piece of muddy-looking marble holds a cast-iron grate which no fire could make cheerful; the bedstead is a mahogany "half-tester," or of cast iron painfully overlaid with vulgar ornament; the wardrobe coarse and heavy, of light wood with dark panels covered with paintings of prehistoric flowers; and the rest of the furniture either oppressively opulent with massive mahogany, or of modern genteel Gothic, a gross libel upon Eastlake; the drapery is rep, and the green Brussels carpet is bespattered with bouquets.

We may dare to assert that in all the essentials of comfort, workmanship, and fitness, our own houses of the corresponding class, bad as they are, are considerably in advance of the English type as here set forth. The Philistinism of our good cousins must be dense indeed, if the enormously active propaganda of their art schools and museums, metropolitan and provincial, if the example and teachings of their Burgesses, Streets, Morrises, Dressers and Eastlakes, for the last busy ten or fifteen years, have not yet penetrated deep enough to create some impression on the domestic life of their middle classes. Our own people, less bound by traditions perhaps, more accessible to fashion and novelty, have certainly felt somewhat of this pervading influence, and some faint reflection of sound principles in color and form has found its way into every respectable house. At all events, if we have not the substance of the new religion, we have at least its shadow — its foreshadow perhaps. Our people have certainly become familiar with the value of neutral tints, and for some reason or other prefer furniture with straight lines decorated with chamfers, notches, cusps, tiles, and billet-mouldings. The conventional white marble mantel has given place to the one in wood, and the carpets are very apt to present nature duly conventionalized. For these reasons we are especially ripe for any good tract in the interest of the new gospel of taste.

The Misses Garrett meet the emergency with tact and spirit, taking no high flights, and confining themselves to homely regions. At least so far as their own countrymen are concerned, the few simple rules which they lay down and their application of them to familiar examples can hardly fail to have good results where a more ambitious treatment of the subject would have stony ground for its seed.

The principles of taste as laid down in these books, though elementary, are in the main sound and of useful application anywhere, but in some respects they seem better suited to the atmosphere of London than to our own. Thus we find in regard to color that the books reiterate the dogma that harmony [analogy?] is more beautiful than contrast, and advocate a lowness of tone and a studied plainness of color which seem singular when we reflect on the subtle oppositions of tints and the delicate appreciation of the value of contrasts, which are exhibited in the modern fabrics and wall-papers from the English manufactories. But, considering the ancient and deep-seated heritage of ugliness against which they address themselves, these ladies have perhaps taken the safest course: it is better not to open the door of the garden too wide if the people are likely to go astray in its mazes. We are disposed to think moreover that in what seem to us their timid limitations of color-treatment, these English ladies have also had regard rather to good housekeeping than to high art; for they wage continual war against the "blacks" or "smut" of the London atmosphere, and provide against it by innumerable contrivances of washable floors and walls, and "harmonize" their colors to meet this phenomenon half way. We Americans may continue to rejoice in our contrasts of positive and neutral colors, and, under our clear skies, to profit by the purity and freshness of bright walls.

In setting forth the value of plain neutral color our authors make the surprising statement that in the best period of painted glass "nearly three-fourths of a painted window were composed of white glass"(p. 19); and Mr. Loftie remarks on his 34th page that "a perpendicular stripe tends to lower the appearance of height." The principles which these books endeavor to inculcate are in the main too good to be endangered by examples which are not in accordance with facts. We must protest too against the woodcuts in Mr. Loftie's book, which certainly do more harm than good; that on p. 38 especially we might select as an example to be avoided in every respect of subject and execution. In its peculiar province of advice on the subject of collecting, his book however is worth reading, and the subject is enlivened with a fund of interesting anecdote.

We have only space to add that none of these authors are absolute in their Gothicism or Jacobinism, and they afford us in respect to furniture a grateful rest from high dogmatism. The ladies especially are well-bred enough to recognize the merit not of comfort and soundness only, but of quaintness, in certain old furniture of the last century handed down through decent and careful households to the present generation. And here is certainly a just observation: "It is obvious that in comparing old woodwork with new, there is danger of comparing the best efforts of the old workmen with the worst or with the most ordinary work of to-day; a comparison which it need not be pointed out is unfair. Such a course is as unreasonable as it would be to compare one of the exhibitions of the old masters with the annual exhibition of the Royal Academy. In each of the first we have the choicest pictures painted by the greatest masters during a space of from ten to twenty years; in the latter we have the efforts of the rank and file for the current year only."

If we are fortunate enough to have lady readers we would commend to them, as among the most valuable passages in the Misses Garrett's book, those relating to the application of needle-work to draperies and to the lost art of marking and decorating household linen (pp. 81, 83).

CORRESPONDENCE.

THE ACCIDENT AT THE NEW YORK POST OFFICE.

NEW YORK.

THE theme of discussion among the architects here since Tuesday the 1st inst., has been the Post Office crash. The general public were horrified on the afternoon of that day to hear that four men had been crushed to death on the upper floor of the new Post Office building by the falling in of a section of the roofing. Rumor for a time exaggerated the affair into a wholesale caving-in of the whole roof; when the rush was over, it was found that a section of the deck-roof near the curb on the north-east curtain of the building had fallen in, killing outright three of the laborers working beneath it, and fatally injuring another. Several escaped most narrowly, two of the men springing through the mansard roof windows upon the broad main cornice. The gang at the time were under the orders of Mr. Thomas A. Oakshott, who now fills the post of supervising inspector in charge of the completion of the building. Mr. Oakshott is by particular occupation a stone-cutter, and had formerly very acceptably filled the post of inspector of cut-stone work; latterly, however, Mr. Oakshott has had supreme control, under the direction of Mr. J. G. Hill, the Supervising Architect.

The room in which the disaster occurred is about fifty feet long by thirty feet broad. On one side is one of the interior brick partition walls sixteen inches thick, beside which is built an eight-inch wall, leaving an air space between; on the opposite side is the framework of the mansard roof. Originally the room had been divided into two unequal portions by a brick wall extending down through the several floors. On the third and fourth floors is one of the United States court-rooms; and to gain more room, the brick transverse partition wall was here removed some time ago, but the section of the wall in the fifth floor was allowed to remain. Having nothing for its support but the ordinary floor beams, it caused a deflection in the ceiling of the court-room sufficiently marked to excite apprehension among the members of the bar and others. The central portion of the wall was knocked away, leaving an irregular arch of brickwork; but even yet the depressions continued, and it was determined to remove the brick cross wall entirely and support the deck-roof at that point by a truss thrown across the room. This would throw the entire room into one space. A truss similar to the one it was intended to erect already existed across the apartment; and in the corresponding apartment at the north-west section of the building three of the trusses sustained the roof. The trusses were of the ordinary Howe form, with four compartments, and about four feet deep between the upper and lower chords. The truss had been constructed at the works of Heberman and Haven of Trenton, and was to all appearances a duplicate of those already in position. The roof above was a heavy construction of concrete and cement, resting upon a series of corrugated iron arches held by nine-inch rolled beams ex-

tending from truss to truss along the length of the room. When the new truss was placed in position, these smaller beams were allowed to rest upon its upper chord, apparently without bolting. The roof was of concrete, three inches thick at the crown of the arches and twelve inches at the haunches; over this was laid a two-inch thickness of cement, and above all a sheathing of copper, making a total weight of one hundred pounds to the superficial foot of roof surface. On Tuesday afternoon the work of placing the truss in position had been completed, and the group of workmen were busily engaged in knocking away the wooden struts which had supported the roof during the progress of the alteration. The last timber had been loosened, allowing the full weight of what was intended to be its permanent load to fall upon the new truss, when, without a warning deflection, the whole area of roof extending from the west wall of the apartment across the place where the new truss had but a moment before rested, up to the old truss, came down with a deafening crash, burying several of the men, and throwing down sections of plaster off the ceiling into the empty court-room below.

Mr. Oakshott has nothing to say respecting the mishap: he was of opinion that all was right, and can only attribute the break to a flaw in the iron of the truss. Mr. Hill, who was away from the city at the time, on his arrival and after an inspection of the wreck was similarly non-communicative. Already several investigations have been set on foot. The coroner's jury includes R. M. Hunt, President of the New York Chapter of Architects, R. M. Upjohn, Henry Fernbach, Leopold Eidlitz, all architects well known throughout the profession; associated with them are a number of builders and masons, and the prospect is that a thorough inquiry will be made into the antecedents and circumstances of the affair. Thus far, beyond taking a look at the broken ironwork, the jury has not taken any evidence. Secretary of the Treasury, Mr. Sherman, has ordered an investigation on behalf of his department, to discover how far, if at all, any blame may be attached to his subordinates Hill and Oakshott. Upon this commission are Mr. George B. Post and Theodore Weston, architects, William Laimbeer, builder, the superintendent of the Architectural Iron Works, and other experts. The result of the investigation of this committee will be laid before Secretary Sherman in a few days. In addition to these examinations, the United States grand jury here are preparing to act on the matter, and discover if any criminal negligence can be shown on which to base an indictment. The general impression is that there has been a careless neglect in not giving the truss a most careful scrutiny before allowing the weight of the concrete roof to fall upon it. According to one gentleman's statement who was in conversation with superintendent Oakshott after the crash, he does not appear to have been aware of the weight of the roof which he was attempting to support. So far as he knew, he had placed the truss as the others were placed, and beyond the flaw theory he can give no reason for its fall.

Ex-Supervising Architect A. B. Mullett says, "The trouble in this case was that the truss was not properly put in. It was treated as though it were a girder, when in reality it was a suspensory truss; and instead of being fastened at the upper corners, as a truss should be, it was set in the wall at the lower side of either end, and of course it turned over under the weight of the roof, and broke down."

The ultimate cause of the accident, Mr. Mullett thought, was the dismissal of Gen. Steinmetz from his post as engineer-in-chief at the building.

Meanwhile many theories are flying about; but somehow the popular notion brings the blame home to Mr. Mullett in not making the change to truss from brick wall at once upon the partial removal of the latter, instead of leaving the work to drag along to this tragic finish. On the other hand is the fact that Mr. Mullett's control of the building had ceased; to Mr. Hill must be attached all present responsibility and blame, if negligence can be shown. On the 7th inst. the coroner's inquest will open its sessions, and by next week I hope to be able to give you the "intelligent verdict" at which they may arrive.

The Jauncey Court work, on which a spirited competition has been in progress between many Institute and non-Institute architects, and which was decided by the selection of the design from Mr. Alfred H. Thorp, has again fallen through; the joint owners of this valuable piece of Wall Street property having agreed to disagree on some trivial matters, have laid aside the general designs of Mr. Thorp. That gentleman will now act as architect for the Orient Insurance Company, in covering half the plat, while the Queen Insurance Company have secured Mr. Charles W. Clinton as architect for their section of the ground. The consequence is that in place of the united, harmonious street front, about which so many pleasurable anticipations were raised in those who are familiar with Mr. Thorp's excellent Racquet Club design, we are to have two narrow buildings of various and perhaps discordant treatment.

LIMIT OF RESISTANCE FOR SAND AND CLAY SOILS. — The Washington Monument as standing at present exerts a pressure of $4\frac{8}{10}$ tons per square foot, yet in 1874 the Board of Engineers for Fortifications stated that a pressure of five tons per square foot for soils composed of clay and sand is excessive.

THE CHICAGO CUSTOM HOUSE.

NEW YORK, April 26, 1877.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Sir, — I had no intention when writing my communication published in your issue of March 24, of instituting a controversy on the subject of the Chicago Custom House. With my retirement from the position of Supervising Architect, I felt with unmixed satisfaction that all the perplexities and annoyances connected with that building were ended. Had I foreseen a prolonged correspondence in relation to this subject, I should have refrained from attempting any correction either of the facts or inferences in the letter from Chicago of March 3. I am quite unable to see the bearing of certain statements made by "Foundations" in the communication published in your number of April 14, relating to the drawings and instructions first issued by the Supervising Architect for the increase of the foundations. How instructions which never took effect could in any way modify the present condition of things, I fail to appreciate. If any inferences are to be drawn from the introduction of this irrelevant matter into the communication, I will leave them to your readers, contenting myself with thanking "Foundations" for the opportunity given me to make certain statements in this connection, which have not, I think, before been given publicity. In reading this communication I am forcibly reminded of the old saw, "When doctors disagree, who shall decide?" "Foundations" says in relation to the additions made to the foundations, as recommended by the third commission, that "in the opinion of many who are competent to judge of such matters, nothing has been done to those foundations which is of any practical utility." In answer I have simply to say that in the opinion of many who are competent to judge of such matters, *something* has been done to those foundations which is of practical utility. When the bearing-surface of the concrete footings was increased in width, little more than one-fourth of the ultimate weight of the building had been placed on these footings, and they had not therefore been brought down to the level to which it is fair to conclude such weight would finally bring them. It will not be denied that had they been increased in width before the basement was built, their capacity to carry would have been in relation to this increase. Had the entire weight been placed on the concrete before the additions to it were made, then such increase would have had little if any beneficial result in resisting settlements. The settlement of the building necessarily takes place as the weight is gradually added to it, and any increase of foundation must be made at an early stage of the work to produce any good result. If only one-fourth of the ultimate load was on the concrete at the time its width was increased, it is fair to conclude that it had by no means reached its utmost settlement. If it had not reached its utmost settlement, and the bearing-capacity was increased, it would follow that such increase would produce a beneficial and practical result.

"Foundations" gives at some length the action of the Supervising Architect, in issuing the first instructions with drawings, for the increase of these foundations, which proposed undermining the concrete under the building, and setting the new concrete below the line of the old concrete and running under it twelve inches; and he appeals to architects and engineers as to "whether this method of re-enforcing foundations could be of much practical utility." I am very well aware that this action at the time placed me in a very false position, and I shall recount the facts connected with the action, all of which is part of the unwritten history of the report of the third commission. When the investigations of this commission were completed, and its report written and signed, one of the members at the request of the Secretary of the Treasury brought the report to Washington in person, that any thing which was not clear might be explained to the Secretary and myself. When the matter of filling in these voids was discussed, I took the position that the proper way to do it was the manner which was finally adopted. The member of the commission, however, dissented from this, and stated *as the opinion of the commission* that the proper method was to set the new concrete below the old. I thought it an extremely hazardous if not impossible scheme; but as every action of mine in relation to the building had been misconstrued and set down to malice and a desire to destroy the building to build one from my own designs, I declined to act on my own judgment, and proposed to make a drawing of this method and submit it to the member for examination, and if possible to ascertain whether the drawing fully conveyed the views of the commission. Such drawing was prepared, with instructions to excavate the area not more than eight or ten feet at any time, so as to undermine the original concrete as little as possible. The drawings and the instructions were submitted to this member *in the presence of* the Secretary of the Treasury, and he pronounced that they embodied the opinion of the commission as to the best method of doing the work. While I had protested and expressed entirely different views, I prepared this drawing in accordance with information which not only I but the Secretary considered reliable; for it was for this express purpose that the member of the commission accompanied the report, — the purpose of giving information on any subject not clearly and explicitly set forth in the report. I have not forgotten that numerous petitions, not only

from government officials, but from architects and citizens, were immediately sent to the Secretary of the Treasury asking for my removal on the ground of incapacity; but the Secretary plainly saw that I as well as himself had received misinformation on this point, and that the fault was not to be laid at my door. I need not say that no one knew so much of the facts connected with the case as Mr. Bristow, and I need not add that I was not removed. I have borne until now the censure of the Chicago architects for a course of action which up to the present time has never received, so far as I know, any explanation. I stated in my former communication that the conditions were not the same now as they were when the first commission examined the building, and prepared its report; and this statement is corroborated, I think, by "Foundations" when speaking of the measures taken to equalize the weights and lighten the walls, which measures, had they not met his approval, would not have been spoken of in a "complimentary spirit." It is a matter of little moment whether the conditions are changed by successful additions to the foundations, increasing their capacity, or in reducing the superimposed weight to a load which the foundations unchanged could safely carry. Either course would result in a change of conditions. In redesigning the building above the main cornice line, the weight of the building was greatly lessened. The interior walls and the backing of the exterior were greatly reduced in thickness, and corrugated iron arching was substituted for brick arching between the floor beams, further reducing the weight. Given a minimum of foundation, the superstructure can be so decreased in weight as to be safely carried by the foundation, or, given a maximum of weight, foundations can be so increased as to safely carry the superstructure. In this instance the superstructure has been materially lightened while the width of the foundations has been increased, and so the conditions are not the same as they originally were, and the arguments then applicable must be modified now. Foundations which were "terribly berated" by the first commission may perhaps now be approved.

I am yours very respectfully,

Wm. A. Potter.

CURIOUS EPITAPHS.

Editor American Architect.

Dear Sir, — I send you two inscriptions which I transcribed some months ago into my pocket-book from two interesting tombs of the past.

Perhaps they may be of interest to some of the readers of your paper. Yours truly,

W. G. H. Smart.

On the top of the "ledger," or covering slab, of a tomb or cenotaph in the old burial-ground near Upham's Corner, Dorchester, Mass., is deeply engraved in strong Roman capital letters the following inscription; and its quaintness of expression and orthography, as well as the fact of its being probably one of the oldest inscriptions of the colonial times in the country, make it interesting. Above the inscription is a well-executed bas-relief representing a cavalry broadsword in its sheath: —

Heare · lyes · our · Captaine · and · Maior · of · Suffolk · was · withall .
A · Godly · Magistrate · was · he · and · Maior · Generall ·
Two · Troups · of · Hors · with · hime · here · came · such · Worth · his · Love · did · crave ·
Ten · Companyes · of · Foot · also · mourning · march · to · his · Grave ·
Let · all · that · read · be · sure · to · keep · the · Faith · as · he · hath · done ·
With · Christ · he · lives · now · crowned · his · Name · was · Humphry · Atherton ·
He · died · the · 16 · of · September · 1661.

The next inscription appears over the doorway of a tomb in the crypt or basement of King's Chapel in this city. The tomb bears the name of "Joseph Burrell:" —

Death is the good man's friend, and the day of his death is better than the day of his birth.
"Was Death deny'd, e'en Fools would wish to die."
The hope of future life softens our cares, and heightens every bliss: —
Then rest in peace, for we shall live again.

A STORY OF A WELSH COLLIERY.

The liveliest interest has been felt all over England and Wales in a story which illustrates with startling clearness the dangers that lurk in the bowels of the earth, and the pluck and heroism which sometimes ennoble the dull, hard life of the miner. On Wednesday evening, the 11th of April, as the men were on the point of leaving work in the Tynewydd Mine, near Pontypridd, the roar of rushing water was heard, and the galleries and tunnels suddenly began to fill. The water had broken through from an abandoned and flooded mine, and of course rose in the main shaft and the lateral workings until it found its level. Most of the men made their escape, but when the roll was called, fourteen were missing. An exploring party went down to look for them. They found all the galleries within a few hundred yards of the bottom filled to the roof, but a knocking heard behind a wall of coal indicated that some of the missing men were imprisoned alive in a gallery which sloped upward, its mouth being under water. The wall was a few yards thick. Volunteers went at it with their picks; the prisoners worked from within; in a few hours they could hear one another's voices; but the moment a hole was broken through, the confined air, kept under great pressure by the rising water, burst out with a terrific explosion, and one of the imprisoned miners was shot into the opening as if he had been blown from a gun. He was taken out dead. Four others in the chamber with him were rescued uninjured. Knockings, however, were heard further on, and it appeared that other missing men were in a similar but still worse predicament — shut into a chamber of compressed air. It is with the efforts to release this second party that the chief interest of the story begins.

The wall behind which they were confined was in a heading that was flooded, and nothing could be done with the pick until the water had been pumped out. Divers first attempted the perilous feat of reaching the opening from the main shaft through half a mile of water, and it was afterwards ascertained that one of the men within had tried to escape in the same way. This, however, was impossible. It was not until Monday, the fifth day, that the volunteers were able to begin digging. The distance to be cut was a hundred and twenty feet. The work went on day and night with an eagerness that seemed like desperation, and yet it was so slow! Cutting through the solid coal, in a gallery not more than three feet high, where the water, only kept down by constant pumping, threatened every moment to rise and ingulf them, with trouble from gas and the danger of another explosion of air always before them, the rescue parties took their lives in their hand whenever they went into the mine; and their wives followed them with sad eyes as they entered the shaft, doubting if they would come up alive. And the hope of saving their comrades, shut up so long without food, was at best but a forlorn one. To reduce the danger from the sudden liberation of the air, — danger not only of a violent explosion, but of a sudden rise of the water in the chamber as soon as the pressure should be relieved, — air-tight doors were constructed in the cutting, and an air-pump was set in operation to establish an equilibrium on both sides of the wall. On the 18th, a week after the accident, voices were heard, and the working party were cheered by a faint cry, "Keep to the right side: you are nearly through." On the 19th, the work had made such progress that an iron tube was forced eight feet through the barrier of coal, and an attempt was made, but without success, to introduce milk through it to the famishing prisoners. The miners learned then that there were five of their comrades in the chamber, all alive, but two of them nearly exhausted.

On the night of the 19th, there remained only eighteen inches to be cut away, and the excitement rose to fever heat. An enormous assemblage of people surrounded the mouth of the mine; physicians were in readiness; a temporary hospital was prepared, and a house near by was put in order for the sufferers, if haply they should be got out alive. The state of the work was discussed in Parliament, and bulletins were flashed at short intervals to the farthest ends of the kingdom. But just when it seemed that a few strokes of the pick might complete the labor, an eruption of gas took place, and the working party had to run for their lives. In time, however, the air was renewed, and the work went on. At last, on the afternoon of Friday the 20th, a hole was knocked in, and one of the cutting party entered the cavern. All was still; in their weak condition the agitation of the moment made the imprisoned men speechless. The rescuer felt about, and, not finding any one, shouted, "Don't be afraid." The answer came, "All right; we are not afraid," and then a pair of rough arms were thrown about his neck. The first to be taken out was a boy named Hughes; and it is related that when the car came to the surface and the long suspense was over, the vast crowd of spectators "did not cheer, nor use any of the ordinary means of showing enthusiasm: all seemed too serious for that."

Cases of life preserved without food for ten days, and even longer, are not rare; though the period of abstinence which these Welsh miners endured is considered the longest which man is capable of sustaining under ordinary conditions. They were able to drink the dirty water in the mine; and water, it is well known, has a great influence in retarding the effects of starvation. They obtained a little sustenance also by sucking the grease that stuck to the bottoms of their candle-boxes, but they ate nothing during the whole ten days. Still they retained so much strength, that when the iron pipe was pushed through the wall, and the water began to rise in consequence of the escape of the air, they were able promptly to plug up the aperture; and one of the men even wished to walk when he was taken out, but the doctors refused to let him. There was only one of the five, about whose recovery any doubt was expressed at the date of our last advices. There are still four men to be accounted for out of the fourteen who failed to make their escape when the waters broke through, and these are undoubtedly drowned. — *New York Tribune.*

A Monument to Virgil. — A monument is about to be erected at Mantua, in honor of Virgil.

NOTES AND CLIPPINGS.

Sculpture for the Capitol at Hartford. — Ives, the American sculptor in Rome, has prepared designs for two marble figures, to be placed over the eastern door of the new Capitol at Hartford. They are reduced figures of his statues of Trumbull and Sherman that Connecticut has sent to Washington. Those for the Capitol will be seven feet high, and cut in marble. Much above them, around the base of the dome, there will be twelve statues, eleven feet high, and of various symbolic significance. Other figures will fill the complementary places above the main doors on other fronts of the building, corresponding with the two of Trumbull and Sherman.

The Hartford Cathedral. — The Roman Catholic cathedral at Hartford, the corner-stone of which was laid on the 29th ult., is to be an elaborate brown-stone edifice of the Gothic style, with two spires each 220 feet high. Over the main entrance there will be a marble statue of St. Joseph, crowning the apex of the roof. The nave will be 264 feet in length and 93 feet in width; the transept, 178 feet; the sanctuary, 33 x 88 feet. The interior walls will be of highly polished marble; the roof will be of slate, heavily ribbed inside. There will be 200 windows in the cathedral, and 7 in the sanctuary; over the main entrance there will be an immense rose window of intricate design; the interior will be unbroken by galleries, and the pews will accommodate 2,000 persons, and there will be five marble altars. The remains of the late Bishop McFarland are to be placed under the high altar. The cathedral will cost about $300,000.

Injunction against Blasting denied. — Susan Sturges is the owner of a house and lot on the northerly side of West Forty-second Street, between Seventh and Eighth Avenues, New York. Adjoining her property are four lots from which Thomas E. Foran and James McManus are engaged in blasting rock so as to clear the lots and make them suitable for the laying of the foundations of houses which they intend erecting. Application was made in the Superior Court, for an injunction to restrain them from continuing their blasting-operations on the ground that her house is rendered untenable and insecure, and that there is danger that it will fall. Messrs. Foran and McManus say that her house was improperly built and its walls are full of cracks, and that it is almost worthless, and was insecure before they began to blast, — all of which seems to be very insufficient reason for Judge Sanford to deny a motion for the continuance of an injunction against them.

Strike. — The painters of New York have notified the masters that on and after May 7 they will demand three dollars per day. A number of employers express a willingness to comply, while others refuse. The society has ordered a strike in all the shops where the demand is not complied with.

Cyprus Antiquities. — The collection of antiquities discovered by Gen. Di Cesnola in the vaults of an old temple at Curium was opened for a private view at the Metropolitan Museum of Art, New York, May 4. The objects which form the collection comprise gold and silver jewelry, bronzes, and many articles used in religious services in the temple. All of the gold objects are in good condition. The silver articles and bronzes, however, are badly corroded.

The White House. — It is said that when after the destruction of public buildings at Washington by the British in 1814, it became necessary to repair the damage, it was found that the sandstone of the President's mansion was badly stained and discolored by smoke and fire, and it was thought best to conceal these defects by white paint; and from that time it was known by the name of the "White House."

Fire-Proof Curtain. — Mr. E. W. Glover of Malden, Mass., has invented a fire-proof curtain which successfully resisted the severe tests to which it was subjected at the time when it was publicly tested some time since. It is intended to remain flat, and to be hoisted and lowered bodily. The surface next the audience is of a chemically prepared canvas, which cannot be made to blaze, no matter how intense the heat. The other side is of wire gauze 40 mesh, and between these two parts is a dead air space of from three to four inches in depth. At the top, on the stage side, a spray of water is to be thrown upon the wire gauze, and trickling down, will entirely fill the interstices between the meshes, so as to render it absolutely air-tight, preventing any draught of air between it and the canvas, while the steam which is constantly generating in case of a hot fire will aid in checking the progress of flame, and will so exhaust the air inside the curtain as to leave nothing to sustain combustion. Tests were made by turning upon it a gas-jet which took the full supply from a 30-burner meter. This intense heat thrown against the wire gauze, both when dry and wet, failed to perceptibly warm the canvas two inches away. A piece of ordinary manilla paper was held close to the back of the wire two and a half minutes before igniting, although the only separation from the flame was the wire gauze, then perfectly dry. It took seven minutes before this 30-burner flame forced directly upon a piece of the prepared canvas could burn a hole through it, and then the canvas was only carbonized, and cracked because of its weakness and the impact of the flame. The method of treating the canvas is this: —

1. A light solution (so as to reach and cover the interior fibres) of tungstate of soda, density 50, mixed with one-third silicate of soda, is rubbed in by machinery and then dried.

2. The canvas is then treated with a saturated solution of tungstate of soda mixed with one-half silicate of soda and a saturated solution of alum.

3. A coating of silicate of soda is applied of the consistency of ordinary mucilage in density, mixed with whiting.

The inventor has no intention of applying for a patent.

Manchester Town Hall. — It is said that the Royal Family has declined to assist at the inauguration of Mr. Waterhouse's Town Hall.

The Shakespeare Memorial. — On April 23, the anniversary of the poet's birthday, the corner-stone of the Shakespeare Memorial Theatre was laid at Stratford-on-Avon.

Fall of a Floor. — On April 10, a floor that was building on the premises of the Messrs. Meux, brewers, London, gave way, causing serious injury to six of the workmen. The work in course of construction was for an ice-freezing room. It appears to have been constructed with two large wrought-iron girders set about thirteen or fourteen feet apart (carrying rolled-iron joists and arches to make a solid floor), and brick enclosure-walls; altogether a very strong structure, and one designed to carry a great weight. The immediate cause of the accident seems to have been the putting too much trust in the old though apparently sound walls of the brewery; for the girders rested upon an old wall on one side, while it was supported on the other by iron stanchions. There may have been some special shock to disturb the balance of the resisting forces, but the crushing down of the old wall was the immediate result, causing the girders to slip aside and throw down the brickwork.

Fresh Water for London. — Londoners are much interested in the discovery that has been made on the premises of the Messrs. Meux, mentioned above, of a copious supply of pure water, which was obtained by sinking a well to the depth of 1001 feet, where the green sand was struck, and pure water was obtained. The well was sunk because of the great cost that attended the use of the Thames water. Thanks to the efforts of the Thames Conservancy, the water of the Thames is now much purer than it was, not many years since, when the waste from dye-houses and factories and the sewage from towns were allowed to discharge themselves into the river; but though it is, as things go, fair potable water and better than is to be had in half the other places in the kingdom, there is still room for improvement, and Londoners look upon the discovery as the promise of a great boon.

Steeple-Jacks in France. — The weathercock on the steeple of the village church in Soudan, France, was timeworn and rusty, and those in authority decided that it should be removed. A man clambered up the steeple, but just before he could reach the weathercock, he lost his balance and slid down for seventy feet, then rebounded to the roof of the church, and was precipitated to the ground without being seriously injured. Then a man named Chevalier strove to haul himself up by means of a rope; but at last his hands slipped, and he fell backward. His foot caught in the rope; and there he remained, a hundred and twenty feet from the ground, with his head down, beating the air with his arms, struggling to recover himself, and swaying backward and forward in the high wind. Pierre Péan now stepped forth, and volunteered to mount to the rescue of Chevalier; but after doing his best for three-quarters of an hour, he had to descend. His place was taken by Moreau, who, climbing higher than Chevalier, slipped a rope round his body, and cutting that which held his foot, freed him from the fearful position in which he had remained for three hours.

Traces of the Original Tuileries. — The workmen who were excavating the road-bed for the new carriage-way that is to pass before the garden front of the Tuileries discovered lately in the remains of kilns, traces of the tile-works established during the thirteenth century which gave to the locality the name which Catherine de Medici adopted as the title of the palace which Philibert de l'Orme began to build.

The Palaces of the Khedive. — Travellers who visit Cairo can hardly wonder at the depreciation in the value of Egyptian bonds when they behold the extravagance with which the viceroy squanders his money. It has become a standing joke to reply to one who asks what may be a certain building, that it is one of the "palaces of the Khedive." Three years ago, it was said that his Highness had thirty-three palaces, and still he goes on building new ones.

Strength of Bricks. — The Royal Society of Engineers at Berlin has been experimenting during the past five years, on the strength of building-materials. The results of experiments upon bricks are stated in the following summary: —

1. *Common Bricks.* — Number of sorts, 55; number of tests, 843. Pressure at which the first crack was noticed, — limits, 597 and 2,672 pounds; or an average pressure of 1,420 pounds. Crushing pressure, — limits, 697 and 3,200 pounds; or an average of 1,765 pounds.

2. *Hard-burned Bricks.* — Number of sorts, 35; number of tests, 850. Pressure at which first crack was noticed, — limits, 1,114 and 3,257 pounds; or an average of 2,175 pounds. Crushing pressure, — limits, 1,536 and 4,395 pounds; or an average of 2,760 pounds.

In the experiments an entire brick was placed in the machine, and the pressure per square inch when the brick first cracked was noted, as also the pressure which finally crushed it. The Department of Public Works of Berlin allows a pressure of 200 pounds per square inch, where the best of bricks and cement are used.

The Transparency of Metals. — By electrical means thin films of gold and other metals can be obtained which readily transmit light. The mode of operating to produce these attenuated sheets of metal is simply to cause electric sparks to pass from wires of the required metals into tubes of rarefied air, or other gases, when the particles of metal detached from the wires by the sparks become deposited on the sides of the glass, and form an excessively thin film, quite continuous under the microscope. Gold films thus prepared transmit a fine green light; silver gives a fine blue color; copper a dull green; platinum a bluish gray; zinc and cadmium a deep bluish gray; and iron a nearly neutral tint, but slightly brownish. Before this discovery gold was thought to be the only metal capable of transmitting light even in a very slight degree.